

## COURSE REPORT

# TRAINING ON RECLAMATION AND REVEGETATION TECHNIQUES FOR POST-MINING LAND

January 15-18, 2018  
Samarinda & Samboja, East Kalimantan, Indonesia

A field training organized by:  
Environmental Leadership & Training Initiative (ELTI)  
Tropenbos Indonesia Program (TBI)  
Balai Diklat Lingkungan Hidup & Kehutanan Samarinda (BDLHK)  
Balai Penelitian & Pengembangan Teknologi Konservasi Sumber Daya Alam (BALITEK-KSDA)



Participants looking over a recently revegetated site at PT Singlurus Pratama

**Background:** Indonesian Ministry of Environment & Forestry regulations allow for sections of the country's forestry estate to be used for temporary development purposes, including mining. In East Kalimantan, approximately 100 permits have been issued to companies, covering a total area of 192,450 hectares. While mining results in serious environmental damage, the Ministry tries to mitigate the impact of mining by requiring concession holders to carry out reclamation and revegetation of the disturbed sites. Reclamation is essentially the effort needed to rehabilitate the land through techniques like recontouring and restoring the topsoil, whereas revegetation is the effort used to restore tree cover after the cessation of mining.

ELTI is an initiative of: **Yale SCHOOL OF FORESTRY & ENVIRONMENTAL STUDIES**



Group photo during the opening ceremony

Progressive rehabilitation and revegetation are required so that mining areas no longer being actively used are restored while new areas are opened up for extraction.

Some mining companies have achieved significant success in their post-mining reclamation and revegetation efforts, but many other face significant problems. A fundamental limitation is that many companies lack both a detailed understanding of what exactly is required of them by government regulations, and well-trained staff who have the technical knowledge needed to implement the work. To address this problem, ELTI and its partner organizations developed this training program to build the capacity of mining companies and other organizations that oversee mining operations in mine site reclamation and revegetation areas. This training, which was held at the BDLHK campus in Samarinda and PT Inhutani's Batu Ampar concession in Samboja, established new levels of cooperation between the Ministry's research division, which is at the forefront of developing new rehabilitation techniques, and its training division.

### **Objectives:**

This training was designed to provide participants with the knowledge and skills needed to implement successful mine site reclamation and revegetation. The specific objectives were as follows:

- to describe and explain Ministry of Environment & Forestry regulations that apply to mining within the forestry estate;
- to introduce and describe the use of different tree species in revegetation;
- to provide a detailed understanding of reclamation and revegetation techniques;
- to familiarize participants with the Ministry's system of monitoring and evaluation; and
- to assist participants with the development of reclamation and revegetation strategies for their places of employment.





Mr. Sumaryanto describing the process of reclamation and revegetation at PT Singlurus Pratama



Ms. Yanti Sofia describing the process of monitoring and evaluation



Dr. Arbainsyah describing leaf characteristics

## Program

### Day 1

The first day of the training, which was held at the BDLHK campus in Samarinda, started with a formal Opening Ceremony. Opening remarks were provided by Dr. David Neidel (ELTI-Asia Program Coordinator), Mr. Dwi Nuryanto (Head of the Forum of Technical Mine Heads), Ir. H. Wahyu Widhi Heranata, MP (Head of the Provincial Forest Service), and Dr. Edi Kurniadi (Head of Balai Diklat Samarinda). Ms. Yanti Sofia (Instructor from BDLHK) initiated the training by having the participants introduce themselves and interact with each other in several icebreaker activities. Ir. Gina Regar and Ms. Titin Kuniarsih (Section Head & staff from BPDAS Mahakam Berau) then provided a presentation on the Ministry of Environment & Forestry's regulations that are relevant to mine site reclamation and revegetation. After lunch, Dr. Edi Purwanto (Director of TBI) gave a presentation on controlling erosion and sedimentation in mine site rehabilitation. He also discussed the usage of fertilizers and other soil amendments. Mr. Sumaryanto, ST (Technical Mine Head of PT Singlurus Pratama), then explained about reclamation and revegetation techniques in forest areas, as well as the indicators that are used by regulators to evaluate rehabilitation success. Finally, Dr. Ishak Yassir (Senior Researcher at BALITEK-KSDA) gave presentations on choosing the appropriate species for revegetation, maintaining genetic variation, and the challenge of planting on heavily degraded soils.





A group of participants working on plant identification



Dr. Arbainsyah teaching participants how to differentiate different genera of dipterocarps



Dr. Ishak Yassir introducing a tree planting exercise in a newly reclaimed site

## Day 2

Training participants travelled to Bukit Bangkirai, an eco-tourism site managed by PT Inhutani I, where the training continued. Ms. Yanti Sofia gave a presentation on monitoring and evaluation in relation to the government regulations. After lunch, Dr. Arbainsyah (ELTI Program Assistant) spoke about the terminology needed to identify plant species for restoration. Participants were then divided into teams and escorted to Bukit Bangkirai's arboretum and nursery, where they were introduced to a number of useful species as well as instructed to collect a number of specimens and describe the trees from which they were collected.

## Day 3

After a safety induction by Mr. Steivanus Kalangie (staff of PT Singlurus Pratama), the participants were transported to the PT Singlurus Pratama mine. At the first site, a typical newly reclaimed area of the mine site, participants were given a number of trees to plant and asked to reflect on their approach to planting. At the second site, participants were introduced to a Korean-sponsored restoration site. Dr. Ishak Yassir discussed some shortcomings of the site, and then Ms. Yanti Sofia split the participants into groups and had them analyze two rows of planted trees each to identify other issues. At the third site, participants visited a 5-year old reforestation site where 9 species of native trees had been trialed. After lunch, participants visited two additional restoration sites which had recently been evaluated and approved by the Ministry of Energy & Mineral Resources. They then visited PT Singlurus Pratama's passive wastewater treatment ponds, before visiting the mine's nursery site where Dr. Ishak Yassir &





Mr. Burhan explaining the results of a planting trial using native species



Dr. Ishak Yassir explaining the process of making biochar



Mr. Arbain explaining techniques for vegetative reproduction

Mr. Arbain (staff of PT Singlurus Pratama) discussed the process for creating bio-char, a soil amendment, and Mr. Arbain and Dr. Arbainsyah demonstrated a method for vegetatively reproducing late successional trees. After dinner, the participants were divided into their groups again and asked to discuss their reflections on planting and evaluating the Korean-funded reforestation site that had been conducted earlier in the day.

#### **Day 4**

The fourth day of the training started with a written course evaluation. Afterwards, each of the participants presented individual action plans that they hoped to implement once they returned to their place of work. Course participants are expected to discuss these plans with their direct supervisors and/or the mine head, revise their plans based on feedback from company supervisors, and then provide a refined (and approved) version of their plan to the training organizers for monitoring and evaluation. After this session, Dr. Arbainsyah presented the ELTI Leadership Program. The training ended with a Closing Ceremony with Dr. Edi Kurniadi and Dr. David Neidel.

#### **Participants:**

The training was attended by 25 participants representing mining companies and Forest Management Units, which contain mining sites within their areas.





Training participants and organizers at Bukit Bangkirai

### **Follow-up:**

The training organizers have continued to interact with the participants through a WhatsApp group and will collect their revised and approved work plans. ELTI and the three other organizations that implemented the training are exploring the possibility of collaborating on additional field-based and online trainings. Finally, one of the training participants has requested ELTI's Leadership Program to assist with a training on riparian restoration in a oil palm plantation that he would like to conduct.

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